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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,905	08/27/2003	Hideobu Hamada	MTS-3453US	5089
23122	7590	06/26/2006	EXAMINER	
RATNERPRESTIA			SONG, SARAH U	
P O BOX 980			ART UNIT	
VALLEY FORGE, PA 19482-0980			PAPER NUMBER	
			2874	

DATE MAILED: 06/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,905

Applicant(s)

HAMADA, HIDENOBU

Examiner

Sarah Song

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-22 is/are pending in the application.
- 4a) Of the above claim(s) 15-22 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 is/are allowed.
- 6) ☒ Claim(s) 1 and 4-9 is/are rejected.
- 7) ☒ Claim(s) 11-14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 31, 2006 has been entered.

Claim Objections

2. Claims 4 and 5 are objected to because of the following informalities: Claims 4 and 5 depend from canceled claim 3. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 4 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Grüning et al. (U.S. Patent 5,987,208 newly cited).** Regarding claims 1, 4 and 9, Grüning et al. discloses a slab waveguide comprising a two-dimensional crystal grating having columnar members 4 having a refractive index different from the refractive index of a slab 1 and two-dimensionally and periodically arranged along a surface of the slab, wherein the refractive index of a slab refractive index portion other than said columnar members in the slab, the number, the shape and the refractive index of said columnar members in the slab are selected so that when a

beam of light traveling periodically and entering the slab waveguide, said columnar members and said slab refractive index portion other than said columnar members expands to a maximum extent, the size of the beam in the slab thickness direction does not exceed the slab thickness, wherein the refractive index of said slab refractive index portion in a direction perpendicular to the slab surface is maximized at a predetermined portion other than end portions in said slab refractive index portion, and is not increased with the increase in distance from the predetermined portion, and wherein the refractive index of said slab refractive index portion in the direction perpendicular to the slab surface is distributed symmetrically about the predetermined portion. See column 2, line 46 through column 3, line 8 and Figure 2.

5. Regarding claim 4, the refractive index of said slab refractive index portion in the direction perpendicular to the slab surface is reduced in accordance with a quadratic or an approximately quadratic function of the distance from the predetermined portion.

6. Similarly regarding claim 5, the predetermined portion is a region of a predetermined length other than the end portions in said slab refractive index portion, and the refractive index of said slab refractive index portion in the direction perpendicular to the slab surface is substantially constant in the region having the predetermined length other than the end portions in said slab refractive index portion and is reduced in accordance with a quadratic function or a approximately quadratic function of the distance from an end of the region having the predetermined length.

7. Regarding claim 9, at least one of the boundary surfaces between said slab refractive index portion and said columnar member has a curved surface (the circumferential surface of the columnar member). See Figure 1, for example.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grüning et al.**

10. Regarding claims 6-8, Grüning et al. does not expressly disclose the refractive index distribution constant, optical integer multiple pitch defining a path length, or the sum of incidence-side and emergence-side focal distances as claimed. However, the claimed limitations would have been obvious since it has been held that where the general conditions of a claim are disclosed by the prior art, discovering optimum or workable ranges and values involves only routine skill in the art. MPEP 2144.05(II).

Allowable Subject Matter

11. Claim 10 is allowed.

12. Claims 11-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter: The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not disclose or reasonably suggest a curved boundary surface in the thickness direction of the slab as recited in claim 10, or a boundary surface comprising a flat surface in a

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region having a predetermined length other than end portions in said slab refractive index portion, and curved surfaces in the film thickness direction of the slab outside the region having a predetermined length as recited in claim 11. Baba et al. (cited by Applicant) shows a curved boundary surface in Figures 1b resulting from the manufacturing process. However, the prior art of record provide no suggestion or motivation to provide such a curved surface in the device of Grüning et al. Claims 12 –14 would also be allowable by virtue of their dependency on claim 10 or 11.

Response to Arguments

14. Applicant's arguments with respect to claims 1 and 4-14 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah Song whose telephone number is 571-272-2359. The examiner can normally be reached on M-Th 7:30am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Sarah Song
Primary Examiner
Group Art Unit 2874